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EXAMINER

HUNG, YUBIN

ART UNIT PAPER NUMBER

2625

DATE MAILED: 12/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/891,165

Applicant(s)

SATO ET AL.

Examiner

Yubin Hung

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Response to Amendment/Arguments***

1. This action is in response to amendment filed July 30, 2004.
2. Claims 1-10 have been cancelled. New claims 11-22 are still pending.
3. In view of the applicant's amendment, the 35 USC § 112 rejection of claim 4 has been withdrawn.

***Drawings***

4. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (per P. 7, lines 3 and 5 of the specification). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11, 12, 18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,742,704) and Andrew (US 6,904,402).

7. Regarding claim 21, and similarly claim 11, Suzuki discloses

- transforming multi-bit image data into orthogonal transform coefficients [Fig. 9, ref. 100; Col. 8, lines 42-58]
- quantizing the orthogonal transform coefficients for each spatial frequency of the multi-bit image data [Fig. 9, refs. 101, 102; Col. 8, lines 42-58]
- generating a block of data, the block of data comprising the quantized data of each spatial frequency [Figs. 8A-8C; Fig. 9, refs. 102, 103; Col. 7, line 61 - Col. 8, line 20; Col. 8, lines 42-56]
- outputting, as bit serial data, the quantized data of the spatial frequency over a plurality of the rearranged blocks and coding the bit serial data [Fig. 9, refs. 103-104; Col. 8, lines 42-58]

Suzuki does not disclose expressly

- rearranging the quantized data in the generated block of data so as to band the quantized data for each spatial frequency and so as to align the quantized data of a spatial frequency of the generated block of data with the quantized data of the same spatial frequency of the next generated block of data

However, Andrew teaches/suggests rearranging quantized blocks so as to band quantized data of the same frequency band from successive blocks together. [See Fig. 2, ref. 202; Figs. 5-8; Col. 6, lines 48-53; Col. 8, lines 22-44.]

Suzuki and Andrew are combinable because they are from the same field of endeavor of image compression.

At the time of the invention, it would be obvious to one of ordinary skill in the art to modify Suzuki with the teaching of Andrew by rearranging quantized blocks so as to band quantized data of the same frequency band from successive blocks together. The motivation would have been to enable selective decoding (of different band(s) of coefficients) according to the desired image resolution or quality.

Therefore, it would have been obvious to combine Andrew with Suzuki to obtain the invention of claim 21.

8. Regarding claim 12, Andrew further discloses

- the spatial frequencies include a DC component, an AC low frequency component, and an AC high frequency component [Figs. 5-8; Col. 8, lines 26-29. Note that first group contains the DC band, the second and the third groups together correspond to the low-frequency AC band and the fourth group corresponds to the high-frequency AC band]

9. Regarding claim 22, and similarly claim 18, it is rejected because given the encoding method of claim 21, it is obvious to obtain the corresponding decoding method

by reversing the encoding steps of claim 21. [Note that the restoring step of claim 22 combines the reverse of the rearranging and the block generating steps of claim 21.]

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10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,742,704) and Andrew (US 6,904,402) as applied to claims 11, 12, 18, 21 and 22, further in view of Parker et al. (US 6,307,962).

Regarding claim 13, the combined invention of Suzuki and Andrew discloses all limitations of its parent, claim 11

The combined invention of Suzuki and Andrew does not disclose expressly

- The coder compresses the bit serial data, using a coding system for facsimile communication

However, Parker teaches/suggests using a binary coder that provides standard fax coding. [See Fig. 1, ref. 18; Col. 6, lines 52-56.]

The combined invention of Suzuki and Andrew is combinable with Parker because they are form the same field of endeavor of image compression.

At the time of the invention, it would be obvious to one of ordinary skill in the art to modify the combined invention of Suzuki and Andrew with the teaching of Parker et al.

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by using facsimile coding/encoding for the coding section. The motivation would have been that they are especially efficient when processing binary data.

Therefore, it would have been obvious to combine Parker with the combined invention of Suzuki and Andrew to obtain the invention of claim 13.

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11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,742,704) and Andrew (US 6,904,402) as applied to claims 11, 12, 18, 21 and 22, further in view of Enokida (US 5,6087,862).

Regarding claim 14, the combined invention of Suzuki and Andrew discloses all limitations of its parent, claim 11

The combined invention of Suzuki and Andrew does not disclose expressly

- the coding system includes a JBIG coding system

However, Enokida teaches/suggests using a JBIG coding system. [See Fig. 1, ref. 5; Col. 3, lines 5-13.]

The combined invention of Suzuki and Andrew is combinable with Enokida because they are form the same field of endeavor of image compression.

At the time of the invention, it would be obvious to one of ordinary skill in the art to modify the combined invention of Suzuki and Andrew with the teaching of Enokida by including a JBIG coding system. The motivation would have been because JBIG supports, among other things, various image display and browsing modes that can be particularly useful in Internet applications, as is well known in the art.

Therefore, it would have been obvious to combine Enokida with the combined invention of Suzuki and Andrew to obtain the invention of claim 14.

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12. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,742,704) and Andrew (US 6,904,402) as applied to claims 11, 12, 18, 21 and 22, further in view of Curry (US 5,710,636).

Regarding claim 19, the combined invention of Suzuki and Andrew discloses all limitations of its parent, claim 11.

The combined invention of Suzuki and Andrew does not disclose expressly

- a half-tone processor configured to half-tone process the multi-bit image data to obtain half-tone data
- a function selector configured to select the half-tone data when a facsimile transmission is selected, and to select the bit serial data when a copy operation is selected



However, Curry teaches/suggests processing the multi-bit image data to obtain half-tone data [Fig. 1, refs. 10-14]. In addition, it is obvious for a system that produces different types of data to be able to select among them for subsequent processing according to a certain processing logic (e.g., by an operator command).

The combined invention of Suzuki and Andrew is combinable with Curry because they are form the same field of endeavor of image compression.

At the time of the invention, it would be obvious to one of ordinary skill in the art to modify the combined invention of Suzuki and Andrew with the teaching of Curry by generating half-tone data, adding the ability to select either the half-tone data or the bit serial data to input corresponding to a function selecting signal for instructing an copy operation or facsimile transmission. The motivation would have been to be able to produce and compress input images to support different output means. (E.g., half-toning will allow a bi-level copier to produce copies that impart a grayscale appearance, as pointed out by Curry in Col. 1, lines 14-18).

Therefore, it would have been obvious to combine Curry with the combined invention of Suzuki and Andrew to obtain the invention of claim 19.

13. Regarding claim 20, the combined invention of Suzuki and Andrew teaches/suggests (per the analysis of claim 11)

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- an orthogonal transformer configured to transform the multi-bit image data into orthogonal transform coefficients;
- a quantizer configured to quantize the orthogonal transform coefficients for each spatial frequency of the multi-bit image data;
- a block data generator configured to generate a block of data, the block of data comprising the quantized data of each spatial frequency;
- a frequency banding section configured to rearrange the quantized data in the
- generated block of data so as to band the quantized data of each spatial frequency and so as to align the quantized data of a spatial frequency of the generated block of data with the quantized data of the same spatial frequency of the next generated block of data, and to output, as bit serial data, the quantized data of the spatial frequency over a plurality of
- the rearranged blocks; and a coder configured to compress the bit serial data

Andrew further teaches/suggests

- an printer configured to print the multi-bit image data  
[Fig. 1; Col. 5, line 35]
- a communicator configured to transmit the multi-bit image data  
[Fig. 1; Col. 5, lines 37-42]

and Curry further discloses/teaches

- an image inputter configured to scan an original document and to obtain multi-bit image data  
[Fig. 1, ref. 12; Col. 3, lines 39-41]

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14. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,742,704) and Andrew (US 6,904,402) as applied to claims 11, 12, 21 and 22, and further in view of Imaizumi et al. (US 5,987,176).

15. Regarding claim 15, the combined invention of Suzuki and Andrew discloses all limitations of its parent, claim 11

The combined invention of Suzuki and Andrew does not disclose expressly

- an editor configured to edit the quantized data of the block of data generated by the block data generator, wherein the frequency banding section rearranges the edited quantized data

However, Imaizumi teaches/suggests rotating (i.e., editing) quantized data. [See Fig. 1, refs. A, b; Fig. 12, refs. 620, 623; Fig. 14, refs. S5-S7; Col. 6, lines 25-44; Col. 16, lines 50-65; Col. 18, lines 44-59]

The combined invention of Suzuki and Andrew is combinable with Imaizumi because they have aspects that are from the same field of endeavor of image compression.

At the time of the invention, it would be obvious to one of ordinary skill in the art to modify the combined invention of Suzuki and Andrew with the teaching of Imaizumi by having a section that rotates (i.e., edits) the quantized data block. The motivation would have been to orient the image properly, if necessary, to improve down-stream processing. (For example, if a document consists of predominant vertical features, then rotate the document 90 degrees before applying an entropy encoding such as VLC for further compression can be beneficial.)

Therefore, it would have been obvious to combine Imaizumi with the combined invention of Suzuki and Andrew to obtain the invention of claim 15.

16. Regarding claim 16, Imaizumi further discloses

- a memory configured to store the quantized data of the block of data generated by the block data generator [Fig. 12: ref. 610]
- wherein the editor rotates the quantized data by controlling a write address and a read address of the memory based on a control data, the control data indicating a rotation amount and a rotation direction [Fig. 12, refs. 611, 622, 623; Col. 16, lines 51-65]

17. Regarding claim 17, the combined invention of Suzuki, Andrew and Imaizumi discloses all limitations of its parent, claim 16.

The combined invention of Suzuki, Andrew and Imaizumi does not disclose expressly

- the editor further adds rotation information to rotated quantized data for each page, the rotation information indicating the rotation amount and the rotation direction for each page

However, **Official Notice** is taken that at the time of the invention, it would be obvious to one of ordinary skill in the art to modify the combined invention of Suzuki, Andrew and Imaizumi by adding rotation information to rotated quantized data for each page. The motivation would have been to provide down-stream processor necessary information to reconstruct the pages.

### ***Conclusion and Contact Information***

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (703) 305-1896. The examiner can normally be reached on 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yubin Hung  
Patent Examiner  
November 29, 2004



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